

- denoting each available cluster with a predefined index before allocating further clusters to the user equipment.
3. The method according to claim 1, further comprising: applying a cluster with an index m to user equipment; and applying a second cluster with an index $n-m$, where n is the total number of clusters within a branch.
4. The method according to claim 1, further comprising: applying clusters having a length of a single physical resource block only from either the beginning or the end of the resource block space.
5. The method according to claim 1, further comprising: aligning the resource allocation structure with the structure used in the allocation of a sounding reference signal.
6. A method comprising:
utilizing a structure with more than one branch in the resource allocation of physical resource blocks;
each branch comprising one or more starting positions for resource allocation;
each starting position being associated with a cluster of physical resource blocks, the number of starting positions being different on each branch, the size of the resource clusters of each branch being different;
denoting each resource cluster with a predefined index;
applying a cluster allocated to user equipment for uplink transmission, wherein the cluster being smaller than any subsequent cluster to be allocated, the structure is arranged for subsequent cluster allocation, using only clusters which are greater than the allocated cluster; and
denoting each available cluster with a predefined index before allocating further clusters to the user equipment.
7. An apparatus comprising a controller configured to:
utilize a structure with more than one branch in the resource allocation of physical resource blocks,
each branch comprising one or more starting positions for resource allocation,
each starting position being associated with a cluster of physical resource blocks, the number of starting positions being different on each branch, the size of the resource clusters of each branch being different,
denote each resource cluster with a predefined index,
apply one or more clusters to user equipment for uplink transmission, wherein the structure is arranged such that clusters to be allocated are not overlapping with the allocated one or more clusters, and
denote each available cluster with a predefined index before allocating further clusters to the user equipment.
8. The apparatus of claim 7, comprising a controller further configured to
apply a cluster to user equipment for uplink transmission;
divide the clusters of the structure in frequency domain into two sections using either the beginning or the end of the allocated cluster as the dividing frequency, wherein the structure is arranged such that clusters which belong to the section including the allocated cluster are not further allocated to the user equipment; and
denote each available cluster with a predefined index before allocating further clusters to the user equipment.
9. The apparatus of claim 7, comprising a controller further configured to
apply a cluster with an index m to user equipment; and
apply a second cluster with an $n-m$, where n is the total number of clusters within a branch.
10. The apparatus of claim 7, comprising a controller further configured to
apply clusters having a length of a single physical resource block only from either the beginning or the end of the resource block space.
11. The apparatus of claim 7, comprising a controller further configured to
align the resource allocation structure with the structure used in the allocation of a sounding reference signal.
12. A apparatus comprising a controller configured to
utilize a structure with more than one branch in the resource allocation of physical resource blocks;
each branch comprising one or more starting positions for resource allocation;
each starting position being associated with a cluster of physical resource blocks, the number of starting positions being different on each branch, the size of the resource clusters of each branch being different;
denote each resource cluster with a predefined index;
apply a cluster allocated to user equipment for uplink transmission, wherein the cluster being smaller than any subsequent cluster to be allocated, the structure is arranged for subsequent cluster allocation, using only clusters which are greater than the allocated cluster; and
denote each available cluster with a predefined index before allocating further clusters to the user equipment.
13. The apparatus of claim 12, wherein the sizes of clusters on the branches are based on powers of at least one given integer.
14. An apparatus comprising:
a receiver configured to receive an uplink resource allocation; and
a transmitter configured to transmit using the allocated resource,
wherein the allocated resource comprises one or more clusters that are determined using a structure with more than one branch in the resource allocation of physical resource blocks,
each branch comprising one or more starting positions for resource allocation,
each starting position being associated with a cluster of physical resource blocks, the number of starting positions being different on each branch, the size of the resource clusters of each branch being different,
each resource cluster being denoted with a predefined index,
the structure is arranged such that clusters to be allocated are not overlapping with the allocated one or more clusters, and
each available cluster is denoted with a predefined index before allocating further clusters to the user equipment.
15. The apparatus of claim 14, wherein the sizes of clusters on the branches are based on powers of at least one given integer.
16. An apparatus comprising:
a receiver configured to receive an uplink resource allocation; and
a transmitter configured to transmit using the allocated resource,
wherein the allocated resource comprises one or more clusters that are determined using a structure with more than one branch in the resource allocation of physical resource blocks,
each branch comprising one or more starting positions for resource allocation,